

REMARKS

In the final Office Action, the Examiner rejected claims 1 - 7, 10 - 12 and 14 - 18 as anticipated by the **Wong et al.** reference, and rejected claims 8, 9 and 13 as obvious over **Wong et al.** in view of **Weiss**.

35 USC 102(b)

The U.S. Patent No. 6,711,577 to **Wong et al.** discloses data mining and visualization techniques. The result is displayed as blocks of different heights along X-Y coordinates in three dimensional space. The association of the rules is displayed with sets of identifiers displayed as locations. In the graphical display, the rows represent items and the columns represent rules. The darkness or lightness of the displayed blocks correspond to the antecedent items and consequent items. The reference shows rule generation for knowledge visualization and generation of association rules.

In **Wong et al.**, the rules each corresponding to a different association between two or more of the items. Association learning algorithms are used to discover elements that occur in common within a given data set. Contrast set learning is a form of associative learning. Contrast set learners use rules that differ meaningfully in their distribution across subsets. Weighted class learning is another form of associative learning in which weight may be assigned to classes to give focus to a particular issue of concern for the user.

In the preferred embodiment, the present invention provide generation of supervised rules (via training from data). A visualization module is used to display the raw data for data visualization and the knowledge learned during training by the inference engine. Supervised (training from data) is a process of mapping from labeled instances to (discrete) classes. Trained models have a form (e.g., decision tree) plus an interpretation procedure how to use them to predict class membership for unlabeled instances.

As is related to 3D visualization space for rule depiction, the **Wong et al.** patent discloses that rules are depicted in the data space (any axis is related to data attribute). A display of a rule-to-item relationship in the visualization is provided for each one of the rules; and wherein the rules each correspond to a different location along a first axis of the

visualization and the items each correspond to a different location along a second axis of the visualization, and further displaying a first metadata attribute for each of the rules along a third axis of the visualization with the computer system.

In the preferred embodiment, the present application provide that the rules are depicted in a 3D graphical space that has no relation to data attributes (i.e., each axis, x, y, z, is not related to any of data attributes). The visualization engine displays the rules as spherical graphical objects. Each sphere essentially represents a rule. The spheres are displayed in a spiral fashion, with the rule having the highest strength in the center and the rules with the least strength as outliers. This arrangement is so chosen since this process is intuitively analogous to the standard clustering process with the cluster centers in the center. The size of the sphere represents the number of examples covered by that rule during learning. Figure 4 of the present application displays a five class example representative of five spirals.

Applicant respectfully disagrees with the Examiner's position that the reference discloses grouping and displaying a rule with a highest strength in a prominent position in the group. The reference describes that the associations are grouped in the display 420 (shown in Figure 6). However, the grouping shown in Figure 6 appears to be more like sorting than grouping and so the reference does not show grouping in the way that grouping is provided in the present invention. Further, there is no disclosure that a group would have a prominent position or that such prominent position would be occupied by a rule with the highest strength. The Wong reference therefore does not teach or suggest the claimed invention of claim 1. Similar distinguishing features are also found in claim 18.

Applicant also respectfully disagrees with the Examiner's position that spheres are shown in the reference and that the spheres are shown in a spiral arrangement. The Wong reference shows only a graphical grid with blocks. The blocks are of different heights, positions and colors, but are not spheres. Applicant is unable to find a suggestion of a spiral arrangement of spheres in Figure 4 as indicated by the Examiner. The reference does not teach or suggest the invention of claim 4.

Applicant respectfully disagrees with the Examiner's position that item 244 of Figure 4 shows a rule of a highest strength at a center of at least one group. The bar graph of Figure 4

does not group the data elements and there is no clear center, there are only bars on a bar graph that have greater or lesser height. The reference does not teach or suggest the invention of claim 11.

Applicant respectfully disagrees with the Examiner's position that the reference shows groups as a spiral arrangement of spheres and that lesser strength rules are displayed at outer portions of the spiral. No spiral is apparent in Figure 4 and no spheres are shown. The reference does not teach or suggest the invention of claim 12.

The claimed invention is therefore not shown in the cited reference. Withdrawal of the anticipation rejection is hereby requested.

35 USC 103(a)

The comments on the Wong et al. reference are set forth above.

The Weiss reference relates to a rule induction method for data mining. Limits on the size and number of rules are provided.

The display according to the present invention is not shown or suggested in the Weiss reference, even when considered in combination with Wong et al. The combined teachings of these references to not disclose or suggest the invention as defined in the claims. As such, withdrawal of the obviousness rejection is hereby requested.

Conclusion

Applicants respectfully request favorable reconsideration and allowance of the present application in view of the foregoing.

Respectfully submitted,



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A handwritten signature in black ink, appearing to read "Jeffrey A. Johnson".

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